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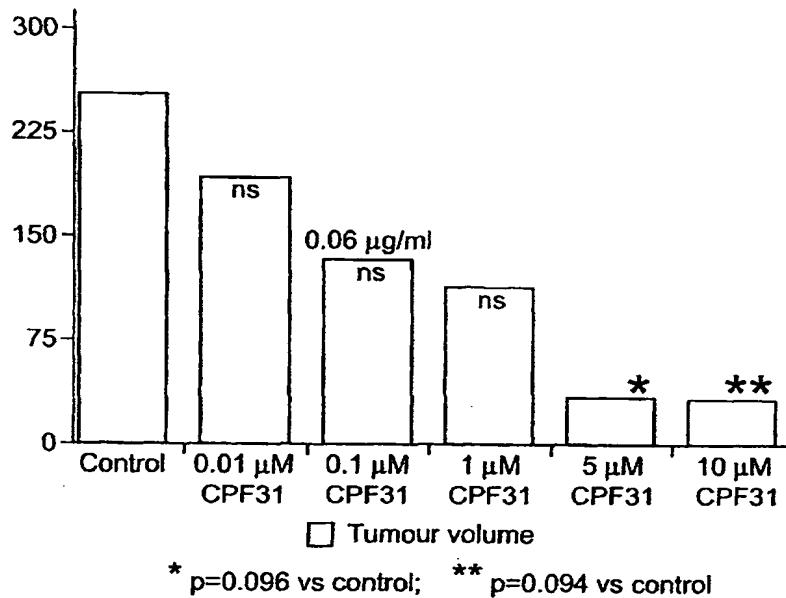
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[Continued on next page]

(54) Title: NUCLEOTIDE PHOSPHORAMIDATES AS ANTICANCER AGENTS



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(57) Abstract: Phosphoramidate derivatives of nucleotides and their use in the treatment of cancer are described. The base moieties of, for example, each of deoxyuridine, cytarabine, gemcitabine and citidine may be substituted at the 5-position. The phosphoramidate moiety has attached to the P atom an aryl-O moiety and an  $\alpha$ -amino acid moiety. The  $\alpha$ -amino acid moiety may correspond to or be derived from either a naturally occurring or a non-naturally occurring amino acid.



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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB2004/003148

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 C07H19/10 A61K31/7068 A61K31/7072 A61P35/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 C07H A61K A61P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/109697 A1 (SHEPARD H MICHAEL ET AL) 12 June 2003 (2003-06-12) the whole document -----	1-6,8-26
X	WO 01/07454 A (GROZIAK MICHAEL P ; SHEPARD H MICHAEL (US); CHAN MING FAI (US); NEWBIO) 1 February 2001 (2001-02-01) the whole document ----- -/-	1-6,8-26

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified).
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*A\* document member of the same patent family

Date of the actual completion of the international search

20 October 2004

Date of mailing of the international search report

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## INTERNATIONAL SEARCH REPORT

International Application No  
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>LACKEY D B ET AL: "Enzyme-catalyzed therapeutic agent (ECTA) design: activation of the antitumor ECTA compound NB1011 by thymidylate synthase" BIOCHEMICAL PHARMACOLOGY, PERGAMON, OXFORD, GB, vol. 61, 2001, pages 179-189, XP002204184 ISSN: 0006-2952 figure 1 the whole document</p> <p>-----</p> <p>S.A. HARRIS ET AL.: "Synthesis and antiviral evaluation of phosphoramidate derivatives of (E)-5-(2-bromovinyl)-2'-deoxyuridine" ANTIVIRAL CHEMISTRY AND CHEMOTHERAPY, vol. 12, 2001, pages 293-300, XP008037325 figure 1</p> <p>-----</p>	1-6,8-26
X		1-6, 8-21,26

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB2004/003148

### Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: 23 because they relate to subject matter not required to be searched by this Authority, namely:  
Although claim 23 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound.
2.  Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3.  Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

see extra sheet

Remark on Protest

The additional search fees were accompanied by the applicant's protest.  
 No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-6 (in part), 8-26 (in part)

Chemical compounds of formula I of claim 1 where Ar is unsubstituted phenyl, uses, methods, compositions and processes pertaining thereto.  
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2. claims: 1-6 (in part), 8-26 (in part)

Chemical compounds of formula I of claim 1 where Ar is a substituted phenyl as in claim 6, uses, methods, compositions and processes pertaining thereto.  
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3. claims: 1-6 (in part), 8-26 (in part)

Chemical compounds of formula I of claim 1 where Ar is not as defined in claim 6, uses, methods, compositions and processes pertaining thereto.  
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4. claims: 7 (in full), 8-19 (in part)

Chemical compounds of formula II of claim 7.  
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**INTERNATIONAL SEARCH REPORT**
**International Application No**
**PCT/GB2004/003148**

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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